

## **IN THE CLAIMS:**

Please amend the claims as set forth below:

### 1. (Previously Presented) A system comprising:

at least one computer system, wherein the computer system is configured to execute a virtual machine corresponding to a user, wherein the virtual machine comprises an operating system and at least one application executable on the operating system, and the operating system and application executing on the computer system during use;

a storage subsystem configured to store data representing the virtual machine, the data including the operating system and the application; and

at least one file server coupled to a network to which the computer system is configured to be coupled, wherein the file server is further coupled to the storage subsystem, and wherein the file server is configured to provide the computer system with access to the data representing the virtual machine on the storage subsystem over the network, wherein the data on the storage system includes the operating system and the application, and wherein the computer system is configured to read the data representing the virtual machine from the storage subsystem through the file server for execution of the virtual machine on the computer system, the data read from the storage system including the operating system and the application.

### 2. (Currently Amended) The system as recited in claim 1 wherein the at least one file server comprises a plurality of file servers in a cluster, and wherein a failover from a first file server in the cluster to a second file system in the cluster is transparent to the user of the computer system.

3. (Original) The system as recited in claim 1 wherein the computer system is configured for essentially continuous connection to the network during use, and wherein the computer system is configured to effect modifications to a state of the virtual machine by modifying the data in the storage subsystem.

4. (Original) The system as recited in claim 3 wherein the computer system is configured to cache at least a portion of the data in the computer system.

5. (Original) The system as recited in claim 1 wherein the computer system is configured for intermittent connection to the network during use, and wherein the computer system includes storage configured to store the data representing the virtual machine, and wherein the computer system is configured to replicate modifications to a state of the virtual machine to the data stored on the storage subsystem during times that the computer system is connected to the network.

6. (Original) The system as recited in claim 1 wherein the at least one computer system comprises a plurality of computer systems, and wherein a given computer system of the plurality of computer systems is configured to execute the virtual machine responsive to a user login to the given computer system.

7. (Original) The system as recited in claim 1 further comprising a provisioner server coupled to the network, wherein the computer system is configured, during boot, to issue a remote boot request, and wherein the provisioner server is configured to respond to the remote boot request if the computer system is to be provisioned.

8. (Original) The system as recited in claim 1 wherein the storage subsystem is configured to store data representing a plurality of virtual machines, each of the plurality of virtual machines corresponding to a respective user of a plurality of users, and wherein the system further comprises a maintenance server coupled to the storage subsystem, wherein the maintenance server is configured to perform one or more maintenance actions on the plurality of virtual machines on the storage subsystem.

9. (Original) The system as recited in claim 1 further comprising a second computer system used by an administrator, wherein the virtual machine is executed on the second computer system by an administrator to diagnose a problem reported by the user, and wherein the administrator is configured to update the virtual machine to correct the problem, and wherein the user is configured to execute the corrected virtual machine from the storage subsystem.

10. (Currently Amended) A computer accessible storage medium storing a plurality of instructions which, when executed on a computer system, responsive to a login of a user on the computer system, cause the computer system to execute a virtual machine corresponding to the user, the virtual machine represented by data stored in a filesystem accessible to the computer system over a network to which the computer system is configured to be coupled at least intermittently, wherein the virtual machine comprises an operating system and at least one application executable on the operating system, and the operating system and application executing on the computer system during use, and wherein the data stored in the filesystem that represents the virtual machine includes the operating system and the application, and wherein the plurality of instructions, when executed on the computer system, cause the computer system to read the data representing the virtual machine from the filesystem through the file server for execution of the virtual machine on the computer system, the data read from the filesystem including the operating system and the application.

11. (Previously Presented) The computer accessible storage medium as recited in claim 10 wherein the computer system is configured for essentially continuous connection to the network during use, and wherein the plurality of instructions, when executed, effect modifications to a state of the virtual machine by modifying the data in the storage subsystem.

12. (Previously Presented) The computer accessible storage medium as recited in claim 11 wherein the plurality of instructions, when executed, cache at least a portion of the

data in the computer system.

13. (Previously Presented) The computer accessible storage medium as recited in claim 10 wherein the computer system is configured for intermittent connection to the network during use, and wherein the computer system includes storage configured to store the data representing the virtual machine, and wherein the plurality of instructions, when executed, effect changes to a state of the virtual machine by modifying the data in the storage, and wherein the plurality of instructions, when executed, replicate modifications to a state of the virtual machine to the data stored in the remote filesystem during times that the computer system is connected to the network.

14. (Currently Amended) A computer system comprising execution hardware and a computer accessible storage medium coupled to the execution hardware, the computer accessible storage medium storing a plurality of instructions which, when executed by the execution hardware, responsive to a login of a user on the computer system, cause the computer system to execute a virtual machine corresponding to the user, the virtual machine represented by data stored in a filesystem accessible to the computer system over a network to which the computer system is configured to be coupled at least intermittently, wherein the virtual machine comprises an operating system and at least one application executable on the operating system, and the operating system and application executing on the computer system during use, and wherein the data stored in the filesystem that represents the virtual machine includes the operating system and the application, and wherein the plurality of instructions, when executed on the computer system, cause the computer system to read the data representing the virtual machine from the filesystem through the file server for execution of the virtual machine on the computer system, the data read from the filesystem including the operating system and the application.

15. (Original) The computer system as recited in claim 14 wherein the computer system is configured for essentially continuous connection to the network during use, and wherein the plurality of instructions, when executed, effect modifications to a state of the

virtual machine by modifying the data in the storage subsystem.

16. (Original) The computer system as recited in claim 15 wherein the plurality of instructions, when executed, cache at least a portion of the data in the computer system.

17. (Original) The computer system as recited in claim 14 wherein the computer system is configured for intermittent connection to the network during use, and wherein the computer system comprises storage configured to store the data representing the virtual machine, and wherein the plurality of instructions, when executed, effect changes to a state of the virtual machine by modifying the data in the storage, and wherein the plurality of instructions, when executed, replicate modifications to a state of the virtual machine to the data stored in the remote filesystem during times that the computer system is connected to the network.

18. (Currently Amended) A method comprising:

responsive to a login of a user on a computer system, executing a virtual machine corresponding to the user on the computer system, wherein the virtual machine comprises an operating system and at least one application executable on the operating system; and

communicating, at least intermittently, with a file server that manages a filesystem ~~file system~~ on a storage system, wherein the storage system stores data representing the virtual machine, the data including the operating system and the at least one application, the communicating occurring over a network between the file server and the computer system to provide access to the data representing the virtual machine; and

reading the data representing the virtual machine from the storage system through the file server to the computer system for execution of the virtual machine on the computer system, the data read from the storage system including

the operating system and the application.

19. (Currently Amended) The method as recited in claim 18 wherein the at least one file server comprises a plurality of file servers, the method further comprising clustering the plurality of file servers to provide high availability characteristics in the filesystem, and wherein the clustering comprises failing over from a first file server of the plurality of file servers to a second file server of the plurality of file servers transparent to the user.

20. (Original) The method as recited in claim 18 wherein the computer system is configured for essentially continuous connection to the network during use, the method further comprising effecting modifications to a state of the virtual machine by modifying the data in the storage subsystem.

21. (Original) The method as recited in claim 20 further comprising caching at least a portion of the data in the computer system.

22. (Original) The method as recited in claim 18 wherein the computer system is configured for intermittent connection to the network during use, and wherein the computer system includes storage configured to store the data representing the virtual machine, the method further comprising:

effecting changes to a state of the virtual machine by modifying the data in the storage on the computer system; and

replicating the modifications to a state of the virtual machine to the data stored on the storage subsystem during times that the computer system is connected to the network.

23. (Original) The method as recited in claim 22 further comprising:

correcting a problem in the virtual machine by modifying the data on the storage

subsystem; and

replicating the data from the storage subsystem to the computer system during a time that the computer system is connected to the network.

24. (Original) The method as recited in claim 22 wherein a provisioner server is coupled to the network, the method further comprising:

during boot, issuing a remote boot request from the computer system; and

the provisioner server responding to the remote boot request if the computer system is to be provisioned.

25. (Original) The method as recited in claim 24 further comprising:

an administrator diagnosing a problem with the virtual machine;

the administrator determining that the computer system is to be provisioned responsive to diagnosing the problem; and

the administrator indicating to the provisioner server that the computer system is to be provisioned responsive to the determining.

26. (Original) The method as recited in claim 18 wherein the storage subsystem stores data representing a plurality of virtual machines, each of the plurality of virtual machines corresponding to a respective user of a plurality of users, the method further comprising performing one or more maintenance actions on the plurality of virtual machines on the storage subsystem.

27-28. (Cancelled)

29. (Previously Presented) The computer accessible storage medium as recited in claim 10 wherein the plurality of instructions further comprises instructions which, when executed in response to a boot of the computer system, transmit a remote boot request over the network, and wherein a response to the remote boot request includes code that causes a provisioning of the computer system when executed on the computer system.

30. (Previously Presented) The computer accessible storage medium as recited in claim 29 wherein the instructions, when executed in response to a timeout without receiving a response to the remote boot request, boot the computer system locally.

31. (Previously Presented) The computer accessible storage medium as recited in claim 10 wherein the plurality of instructions, when executed, mount a directory in the filesystem that contains the data representing the virtual machine.

32. (Previously Presented) The computer accessible storage medium as recited in claim 31 wherein the instructions, when executed in response to the directory being mounted read-only, log the user off of the computer system.

33. (Previously Presented) The computer accessible storage medium as recited in claim 31 wherein the plurality of instructions, when executed in response to the directory being locked, attempt to break the lock.

34. (Previously Presented) The computer accessible storage medium as recited in claim 33 wherein the plurality of instructions, when executed in response to the attempt to break the lock being unsuccessful, log the user off of the computer system.

35. (Previously Presented) The computer accessible storage medium as recited in claim 31 wherein the plurality of instructions, when executed, lock the mounted directory.

36. (Previously Presented) The computer accessible storage medium as recited in claim 10 wherein the data representing the virtual machine comprises a swap virtual disk used



by the operating system for virtual memory swapping, and wherein the plurality of instructions, when executed, copy the swap virtual disk to the computer system, whereby swapping is performed only locally on the computer system.

37. (Previously Presented) The computer accessible storage medium as recited in claim 36 wherein the plurality of instructions, when executed in response user log off, delete the swap virtual disk from the computer system.

38. (Previously Presented) The computer accessible storage medium as recited in claim 13 wherein the plurality of instructions, when executed:

determine whether or not a network connection is available to the filesystem in response to the user log in;

request user input responsive to detecting that no network connection is available;  
and

change a first replication state of a local volume on the storage that stores the data representing the virtual machine to primary disconnected responsive to the user input indicating to continue.

39. (Previously Presented) The computer accessible storage medium as recited in claim 13 wherein the plurality of instructions, when executed:

determine a first replication state of a local volume on the storage, the local volume storing the data representing the virtual machine;

determine a second replication state of a remote volume on the remote filesystem that stores the data representing the virtual machine; and

replicate responsive to the first replication state and the second replication state.

40. (New) The computer accessible storage medium as recited in claim 12 wherein the plurality of instructions, when executed, determine that the virtual machine was most recently executed on the computer system, and wherein the plurality of instructions are configured to use the cached portion of the data from the most recent execution instead of reading the cached portion of the data from the filesystem.